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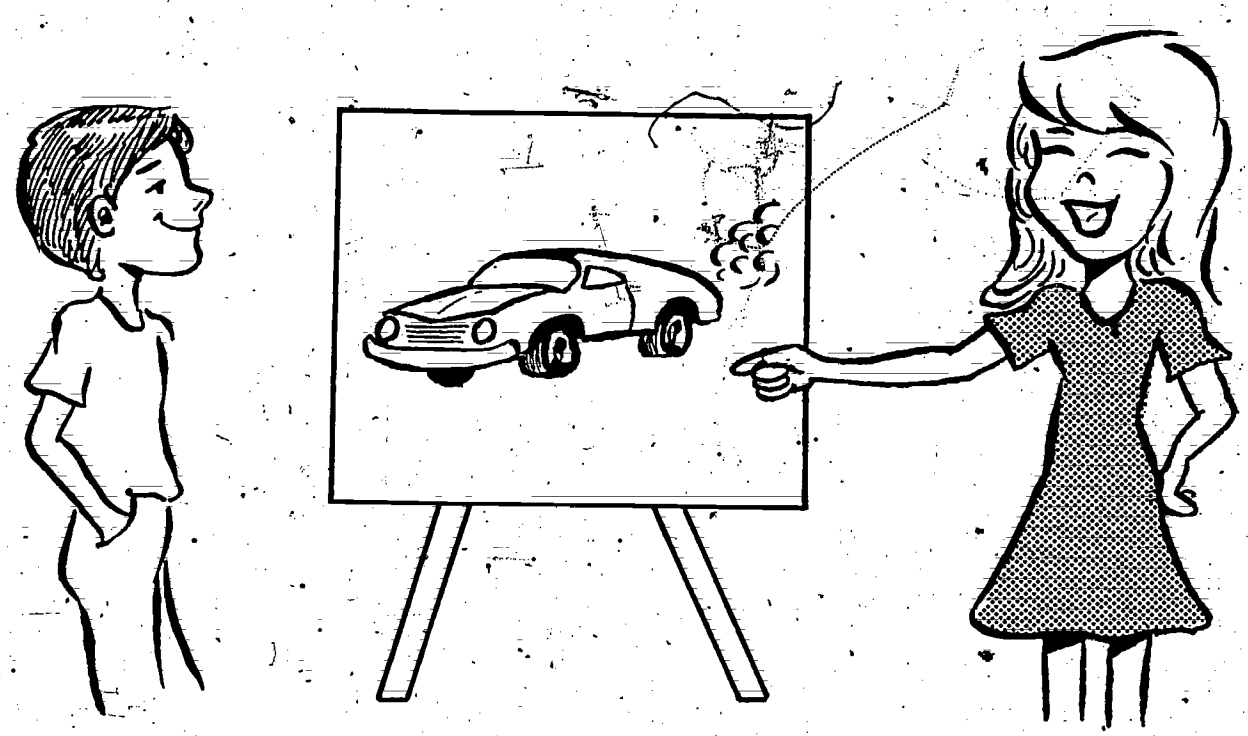
ABSTRACT

This curriculum guide, one of 15 volumes written for field test use with educationally disadvantaged industrial education students needing additional instruction in the basic skill areas, deals with helping students develop basic verbal and visual communication skills while studying auto repair. Addressed in the individual units of the guide are the following topics: writing a script for a silent filmstrip on auto repair, demonstrating automotive jobs, understanding and completing repair orders, using a dwell meter, reading charts, using automotive tools, completing a crossword puzzle consisting of electrical vocabulary, and demonstrating machine operations. Each unit contains some or all of the following: a discussion of the major concepts of the technique being covered, instructions to the teacher concerning the use of the given technique, suggested related activities, student instructions, a student assignment, supplemental activities, and one or more worksheets. A basic skills checklist and a basic skills verification form are also provided to assist teachers in identifying those students who require additional help with basic skills. (MN)

"LEARNING TO VERBALLY & VISUALLY COMMUNICATE THE AUTOMOTIVE WAY"



DEVELOPED BY

THE EDUCATIONALLY DISADVANTAGED COMMITTEE

INDUSTRIAL EDUCATION INSERVICE PROJECT

in cooperation with

The California State Department of Education

Office of Vocational Education
Field Operations Section
Industrial Education Unit
and

California State University - Los Angeles
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INTRODUCTION

These instructional techniques were developed for those industrial education students who demonstrate a need for additional instruction in the areas of reading, writing, math, verbal and visual communication. They were written by industrial education teachers with a particular emphasis upon teaching a basic skill while retaining a major focus on the subject areas of auto, woods, metals, electronics, and drafting.

Each of these instructional techniques were written using the same format and with guidance from an expert in the areas of reading, writing, math, verbal and visual communication.

In order to help you identify those students who require additional help with the basic skills, a simple easy-to-use BASIC SKILLS CHECKLIST is provided with each subject area module. This Basic Skills Checklist will enable you as the Industrial Education Teacher to better identify those students in your classes who require additional help in the basic skills.

Additionally, a BASIC SKILLS VERIFICATION FORM is provided which will enable you to ask your school's reading resource teacher, basic skills teacher, math resource teacher, Hart Bill Conferencing teacher, or grade counselors, to verify your identification and provide you with help in the instruction of the basic skills.

You may wish to use these techniques as instruction for your entire class, or as a take-home, parent-involvement assignment. They may also be used in your school's reading or math lab or in conjunction with your school's basic skills instructional programs.

These instructional techniques are successful because your students are able to relate reading, writing, math, verbal and visual communication to their own industrial education classes. When your students succeed, they feel good about themselves, good about their schools, and good about their future.

CONFIDENTIAL

Name _____

Grade ____ Class _____

Date _____

BASIC SKILLS CHECKLIST (AUTOMOTIVE)

The following is a list of the basic skills (reading, writing, math, verbal & visual communication) that the student should demonstrate an ability in for the purpose of employment or advanced training in the automotive trade.

1.0 Verbal Communication: The student needs additional instruction in verbal communication if any of the items below are checked NO:

1.1 Yes ____ The student understands verbal directions or information given by the teacher.

No ____ Example: The teacher informs the student that safety glasses are required when using the grinder or wire wheel. Does the student use safety glasses when required?

1.2 Yes ____ The student asks questions about instructions or information not understood.

No ____ Example: Did the student ask questions about the operation of a particular machine if it appears that he/she does not understand the instructions given?

1.3 Yes ____ The student is able to apply information and directions heard to work situations.

No ____ Example: After receiving instructions on the proper use of a machine is the student able to have a basic understanding of it's operation?

1.4 Yes ____ The student is able to verbally communicate with the teacher and other students.

No ____ Example: Is the student able to convey instructions/information to other students?

2.0 Writing: The student needs additional instruction in writing if any of the items below are checked NO:

2.1 Yes ____ The student is able to summarize and write a customer work order.

No ____ Example: A customer complains of hard steering; is the student able to convey this problem in writing on the customer work order?

2.2 Yes ____ The student is able to communicate in writing instructions for a job to be performed.

No ____ Example: Is the student able to write a step by step procedure for the correct method of bleeding brakes?

3.0 Reading: The student needs additional instruction in reading if any of the items below are checked NO:

3.1 Yes ____ The student is able to read and understand job related materials.

No ____ Example: Is the student able to read and understand: shop manuals, safety rules, safety warnings (to include the shop safety test).

3.2 Yes ____ The student is able to follow step by step procedures on an instruction or job sheet.

No ____ Example: Although a student was given a demonstration and a procedure sheet to follow, the student continually gets the operations to be performed out of sequence.

.0 Math: The student needs additional instruction in math if any of the items below are checked NO:

4.1 Yes ____ The student is able to add, subtract, multiply, and divide decimals to the thousandths place.

No ____ Example: Add: .975 + .129 Subtract: .896 − .143

Multiply: .931 × .612 Divide: .198 ⟌1.345

4.2 Yes ____ The student is able to compute formulas which require the use of decimals, squared numbers, and multiplication.

No ____ Example: $.7854 \times bore^2 \times stroke \times \#\ of\ cylinders$

4.3 Yes ____ The student is able to compute percentages and ratios.

No ____ Example: How much oil should be added to 40 ounces of gasoline to produce a ratio of 20 parts gasoline to 1 part oil?

4.4 Yes ____ The student is able to read a micrometer, ruler, and vernier caliper.

No ____

4.5 Yes ____ The student is able to compute flat rate hours and multiply that number of hours by the pay rate.

No ____ Example: The student works a 40 hour week; however, flat rate hours are computed to be 60 hours multiplied by $10.00 per hour.

.0 Visual Communication: The student needs additional instruction is visual communication if any of the areas below are checked NO:

5.1 Yes ____ The student can understand working drawings and sketches.

No ____ Example: Can a student understand the proper procedure for the construction of a project simply from viewing a working drawing?

5.2 Yes ____ The student is able to communicate to self and others with simple sketches and/or drawings.

No ____ Example: Is the student able to draw a simple diagram which will remind him/her of the correct position for an engine's vacuum hoses?

DENTIFICATION MADE BY: _____ Date _____

BASIC SKILLS VERIFICATION FORM

Student _____ Male ____ Female ____ Grade Level ____

Teacher _____ Class _____ Date _____

The Basic Skills Check List (attached) for the above student indicates a need for instructional assistance in the basic skills (reading, writing, math, verbal or visual communication). The following verification and recommendations are made:

____ Lacks Reading Skills

____ Lacks Writing Skills

____ Lacks Mathematical Skills

____ Lacks Verbal Communication Skills

____ Lacks Visual Communication Skills

METHOD USED FOR VERIFICATION

Recent Test Scores:

Test	Score	Date

Other Verification Methods:

_____

_____

RECOMMENDATIONS

The following instructional assistance is recommended: _____

_____

Verification & Recommendations Made By: _____ Date: _____

Title: _____

_____

_____

FOLLOW UP

Action Taken: _____

Results: ____ Qualified for advanced training

____ Qualified for employment in the trade

____ Other _____

Certified by: _____ Date: _____

Teacher

SILENT FILMSTRIP

(Verbal And Visual Communication)

Auto Verbal/Visual 1

SILENT FILMSTRIP

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

This technique will teach the skills of LISTENING, THINKING and ORGANIZATION, as well as good VISUAL COMMUNICATION.

b. What student learning problem (s) prompted the development of this technique?

Students do not have good listening, visual, thinking or organizational skills.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. Show a filmstrip to your class which demonstrates a good step-by-step procedure about performing a simple auto skill, e.g. changing engine oil; adjusting dwell, etc.

b. Tell your students to pay close attention to the step-by-step procedure shown in the filmstrip because, at a later time, they will need to write their own step-by-step procedure based on the information shown in the filmstrip.

c. Pass out to your students the step-by-step sheets.

d. Show the same filmstrip again without sound; you will need to manually advance the filmstrip to be sure that your students have enough time to write their own step-by-step procedure for the job shown in the filmstrip.

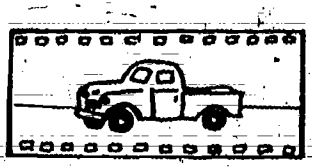
e. Make sure that your students realize that they need to develop their own step-by-step procedure using Step 1, Step 2, Step 3, etc.

f. Collect your students' papers and give those papers to other students for their evaluation. A good evaluation technique would be to let your students actually practice the step-by-step procedures and then choose the best one.

3. SUGGESTED RELATED ACTIVITIES:

As a class project, have your students develop their own step-by-step demonstration of an automotive job and have their demonstration recorded on video tape if possible. 1.1.

SILENT FILMSTRIP



STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

a. Watch and listen carefully to the filmstrip about an automotive job. Pay close attention to the step-by-step method that was used to explain how the job was done.

b. Watch the same filmstrip again without sound. As you are watching the filmstrip, write your own step-by-step procedure for doing the job shown in the filmstrip.

c. Turn your step-by-step method in to your teacher for his/her evaluation.

2. STUDENT ASSIGNMENT:

The STEP-BY-STEP sheet is found on STUDENT PAGE 2.

3. EXTRA THINGS THAT YOU CAN DO:

Get together with another student in your class and write a good step-by-step way to do a job. Use the step-by-step list to help you with the Demonstration Skills Contest of the VICA SKILLS OLYMPICS.

SILENT FILMSTRIP

An important part of any job is to have a good step-by-step way to do the job. From the filmstrip that you are now seeing, write your own step-by-step list using this sheet.

STEP-BY-STEP SHEET

Step 1: _____

Step 2: _____

Step 3: _____

Step 4: _____

Step 5: _____

Step 6: _____

Step 7: _____

Step 8: _____

Step 9: _____

Step 10: _____

Step 11: _____

Step 12: _____

Step 13: _____

Step 14: _____

Step 15: _____

DEMONSTRATING AN AUTOMOTIVE JOB

(Verbal Communication)

Auto Verbal/Visual 2

DEMONSTRATING AN AUTOMOTIVE JOB

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

This technique will teach the skill of Verbal Communication.

b. What student learning problem (s) prompted the development of this technique?

This technique was developed because so often students are unable to verbally give instructions to another student, or are unable to clearly explain a question they might have.

IT IS ALSO A GOOD SELF-CONCEPT BUILDER.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. Pass out the "Demonstrating an Automotive Job" student sheet.

b. Explain what a good demonstration is and provide some good examples during your regular teaching.

c. Offer some suggested topics for a demonstration.

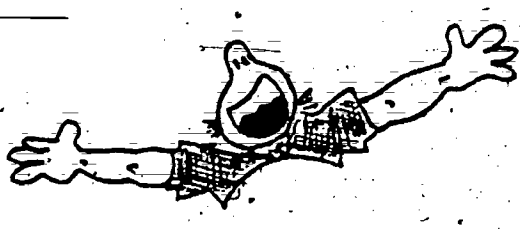
d. Make a sign-up sheet for the demonstrations to be given on certain dates. Be sure that the sign-up sheet has a place for the topic of the demonstration, this will insure that duplicate demonstrations are not given.

e. As the students give their demonstrations before the entire class, you may wish to have the entire class rate the demonstration; or simply to rate it yourself. A rating sheet is provided on the assignment sheet. BE SURE TO MAKE POSITIVE COMMENTS ABOUT THE DEMONSTRATION.

3. SUGGESTED RELATED ACTIVITIES:

You may wish to encourage your students to enter the Demonstration Skills Competition of the VICA Skills Olympics.

DEMONSTRATING AN AUTOMOTIVE JOB



STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

a. You may present your demonstration with a partner.

b. The demonstration must be at least 5 minutes long, but not longer than 7 minutes. You will have points taken away from your score if you do not stay within these time limits.

c. The demonstration must include 3 new automotive words for the class to learn.

d. You will be allowed 2 minutes to set-up your demonstration, and 2 minutes to take down your demonstration. You will loose points from your score if it takes you longer than the 2 minute limit to set-up or take down your demonstration.

e. You may use note cards during your demonstration.

f. You may use visual aids during your demonstration.

g. The best demonstrations are those which show your own ideas and are told in your own words.

2. STUDENT ASSIGNMENT: The Demonstration

a. Choose a simple subject which can be well covered within the time limit.

b. Both partners in the demonstration should share the work; this will make the demonstration equal.

c. The grade that you will receive on the demonstration will be based on the following:

1. Introduction: Did the introduction clearly explain what the demonstration was about?

2. Organization: Was the demonstration well organized? Did you have all of your tools and equipment ready for use?

3. Workmanship: Did the demonstration show good work habits? Did you handle the tools and equipment like a good mechanic?

4. Skill Level: Was your demonstration technically correct?

5. Summary: Did the demonstration close with a good summary?

A good summary will repeat all of the steps that you showed during your demonstration.

RATING SHEET

	Superior	Above Average	Average	Poo
Introduction	5	4	3	2
Organization	5	4	3	2
Workmanship	5	4	3	2
Skill Level	5	4	3	2
Summary	5	4	3	2

TOTAL POINTS: _____

Time Limit: (Penalty Points)

(a) Under 5 minutes (1 point each 15 seconds under time) _____

(b) Over 7 minutes (1 point each 15 seconds over time) _____

(c) Set-up 2 minutes (1 point each 15 seconds over time) _____

(d) Take down 2 minutes (1 point each 15 seconds over time) _____

TOTAL PENALTY POINTS: (subtract from total) _____

FINAL SCORE: _____

3. EXTRA THINGS THAT YOU CAN DO:

After giving a successful demonstration, you may now wish to enter the "Demonstration Skills" competition of the VICA Skills Olympics and come home with a GOLD MEDAL.

REPAIR ORDER

(Verbal Communication)

Auto Verbal/Visual 3

"REPAIR ORDER"

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

LISTENING for details relevant to interpreting a problem.

SELECTING, ANALYZING AND SYNTHESIZING details to complete a required written report.

b. What student learning problem(s) prompted the development of this technique?

Students have difficulty listening for details.

Students have difficulty expressing themselves in concise form.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. Send student to the "customer" with the attached form. Have the student listen to the "customer" describe the problem with his/her car.

b. Have the student fill out as much of the form as possible.

c. The student should then repair the car.

d. Upon completion, the car should undergo testing. Have the finished "Repair Order" returned to you for grading.

3. SUGGESTED RELATED ACTIVITIES:

a. Devise a supplement to the "Repair Order" so the student is forced to pass on information to another student for completion of the job.

b. Provide a variety of printed materials necessary for the completion of the needed repairs.

"REPAIR ORDER"

STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

a. Listen to the "customer's" complaint(s) about the car to be repaired.

b. Fill in the "Repair Order" using what information is available to you before repairs.

c. Turn in the "Repair Order" for grading.

2. STUDENT ASSIGNMENT:

Your "Repair Order" is attached.

3. EXTRA THINGS THAT YOU CAN DO:

Do research on the repaired item. Use technical manuals, consumer guides and/or catalogues.

QUANTITY	DESCRIPTION	INVOICE NO.	SALE AMT.

AUTO SHOP REPAIR ORDER

NAME ____________________ DATE __________ 19__

ADDRESS ____________________ PHONE __________

MAKE OF CAR	MOTOR NO.	LICENSE NO.	SPEEDOMETER READING

INSTRUCTIONS	AMOUNT

I hereby order that the above repairs be made with the understanding that such work will be done as an instructional project by students. In consideration whereof I agree that neither the student body, nor any of its agents or employees shall be liable for loss or damage by fire or theft or for defective repairs or damage during repairs, or for any damage or loss whatsoever, either to person or property whether caused by negligence, or otherwise.

I further agree to pay upon demand at the department in which the work is performed standard list prices for all parts, materials, and supplies furnished by said students in making such repairs.

____________________ Owner

DATE SIGNED

SUMMARY

Parts — Materials $ __________

Sales Tax __________

Other __________ __________

Overhead __________

TOTAL $ __________

USING A DWELL METER

(Verbal Communication)

Auto Verbal/Visual 4

USING A DWELL METER

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

This technique will teach good listening skills.

b. What student learning problem (s) prompted the development of this technique?

Students are very often unable to follow verbal directions because of poor listening skills.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. Record the following instructions for the use of a dwell meter on a cassette tape.

b. Use this tape to instruct your students about the use of a dwell meter.

c. Make sure your students know that they need to listen to the taped instructions very carefully as these verbal instructions will be the only instruction they will have on the use of the dwell meter.

3. SUGGESTED RELATED ACTIVITIES:

Record on tape your instructions for the use of other automotive equipment.

INSTRUCTIONS FOR THE USE OF A DWELL METER

INTRODUCTION: This recorded message will instruct you on the proper way to use a dwell meter. Listen and follow the step by step instructions carefully.

STEP 1: Set the dwell meter knob marked cylinders to either 6 or 8 depending on the number of cylinders that the engine has on which you are working.

STEP 2: Turn the dwell meter to the "ON" position or the "DWELL" position.

STEP 3: Attach the black dwell meter wire to a good ground such as the engine or body part of the car.

STEP 4: Attach the red dwell meter wire to the negative side of the coil or to the wire that is attached directly to the points.

NOTE: On General Motors cars - (Chevy, Buick, Oldsmobile, Pontiac and Cadillac as well as Chevy and GMC trucks that have a window in the distributor cap) the dwell meter may be used while the engine is running. All other cars will need to have the engine cranked with the electric starter while the coil wire is removed.

STEP 5: Adjust the dwell to the correct setting. Most dwell readings should be as follows:

For an 8 cylinder engine the dwell should be 30°

For a 6 cylinder engine the dwell reading should be 40°

For a 4 cylinder engine the dwell reading should be 50°

If your dwell meter does not have a scale for a 4 cylinder engine, simply read the 8 cylinder scale and double the reading. For example - if you are checking the dwell on a 4 cylinder engine, read the eight cylinder scale - it should read 25° which actually means 50° of dwell for a 4 cylinder engine.

STEP 6: After checking and adjusting the dwell, double check your readings and turn the engine off.

STEP 7: Disconnect the dwell meter wires and turn the dwell meter off. The dwell meter has a battery in it and the battery will go dead very quickly if the meter is not turned off.

USING A DWELL METER

STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

a. Using the tape player and tape, listen to the tape that explains how to use a dwell meter.

b. Follow the instructions on the tape. You will learn how to use a dwell meter. If necessary, you may replay the entire tape.

2. STUDENT ASSIGNMENT

The operating instructions for the dwell meter are recorded on a cassette tape. Your teacher will give you the tape and a tape player.

3. EXTRA THINGS THAT YOU CAN DO:

Ask your teacher to record the operating instructions for other automotive equipment on tape.

CHART READING EXERCISE

(Visual Communication)

Auto Verbal/Visual 5

CHART READING EXERCISE

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

This technique will teach both visual and written communication.

b. What student learning problem(s) prompted the development of this technique?

Students have difficulty reading and interpreting charts and graphs.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. Reproduce and pass out "Imported Car Application Guide". Make a transparency for teacher use.

b. Project the transparency and show students how to look up a tune-up part. (Find the year first, then the model, then the engine and note any exceptions or qualifications.)

c. Using the same transparency, explain the symbols and abbreviations.

d. Have students look up the parts in the "Imported Car Application Guide" and write the correct part number in the space provided. Caution students to pay close attention to details.

e. Allow students five minutes to look up part numbers and then give them the correct answers. Analyze the results to see if students can progress to more complicated charts.

3. SUGGESTED RELATED ACTIVITIES:

CHART READING EXERCISE

STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

a. To look up the correct part number:

1. Find the year of the vehicle in column on the left.
2. Find the model of the vehicle in the next column that matches the year of the vehicle for which you are looking.
3. Follow the dotted line to the right to the number that is under the column of the part name that you are looking for.

2. STUDENT ASSIGNMENT:

a. Look up the correct part number for the seven items on the lower portion of the "Imported Car Application Guide" shown on STUDENT PAGE 2. Pay attention to details, abbreviations, and exceptions.

b. Write the correct part number on the line provided.

3. EXTRA THINGS THAT YOU CAN DO:

Obtain a "Motor's" auto repair manual. Look up the tune-up specifications for your car.

IMPORTED CAR APPLICATION GUIDE

YOUR NAME _____

DISTRIBUTOR REPAIR PARTS

Year	Model	Point Set	Condenser	Rotor	Cap	Tune-Up Kit
TOYOTA						
1976	Corona; Celica; Mark II Hi-Lux 20R-C Eng. Corolla 2T-C Eng.	JP30	JCT110	JT91	JT96	6024
1975	Mark II 4M Eng.	JP30	N/R	JT85	JT86	.....
1975	Corolla 1600 2T-C Eng.	JP30	N/R	JT91	JT96	.....
1975	Mark II, Celica, Corona, Hi-Lux 20R-C Eng. (Exc. Dual Ign.)	JP30	N/R	JT91	JT96	.....
1975	Land Cruiser 2F Eng.	JP30	N/R	JT85	JT86	.....
1975	Corolla 1200 3K-C Eng.	JP30	JCT104	JT85	JT86	6022
1974-73	Mark II; 4M Eng. (Exc. Dist. 19100-45050)	JP30	JCT104	JT85	JT86	6022
1974-72	Celica; Hi-Lux; Mark II, Corona, 18R-C Eng.	JP30	JCT110	JT91	JT96	6024
1974-71	Corolla, Carina 1600 2T-C Eng.	JP30	JCT110	JT91	JT96	6024
1974-69	Land Cruiser F Eng. (Exc. Calif.)	JP25	JCT103	JT85	JT86	.....
1974-69	Corolla 1200 3K-C Eng.	JP30	JCT103	JT81	JT84	6017
1973	Mark II; Crown 4M Eng. (Dist. #19100-45050)	JP30	JCT104	JT85	JT86	6022
1972-68	Mark II; Crown 2M Eng.	JP30	JCT104	JT85	JT86	6022
1971	Mark II 8R-3 Eng.	JP25	JCT103	JT81	JT84	6012
1971	Corona, Celica, Hi-Lux, 8R-C Eng. (w/condenser mounted under vacuum control)	JP30	JCT110	JT91	JT96	6024
1971-70	Corona, Celica, Hi-Lux, Mark II 8R-C Eng. (Exc. w/ condenser mounted under vacuum control)	JP25	JCT103	JT81	JT84	6012
1970-69	Corolla 1100 K-C Eng.	JP30	JCT104	JT81	JT84	6022
1970-68	Corona 3R-C Eng.	JP25	JCT104	JT81	JT84	6021
1967	Corona 3R-C Eng. (Dist. #19100-34040; 50; 70)	JP25	JCT104	JT81	JT84	6021
1967	Corona 3R-C Eng. (Dist. #19100-40014)	JP25	JCT103	JT81	JT84	6012
1966-65	Corona 3R-C Eng.	JP25	JCT103	JT81	JT84	6012

Directions: Find the correct part number for the following applications and write it in the space provided. Pay attention to details and abbreviations. w/- with, w/o- without, #-number N/R- none required, ---- not manufactured by this company, Exc.- except, Eng.- engine.

1. A rotor for a 1975 Land Cruiser _____
2. A Tune-Up Kit for a 1972 Carina 1600w/2T-C engine _____
3. A point set for a 1969 Corona w/3R-C engine _____
4. A condenser for a 1965 Corona w/3R-C engine _____
5. A point set for a 1973 Hi-Lux w/18R-C Eng. _____
6. A cap for a 1966 Corona w/3R-C Eng. _____
7. A Tune-Up Kit for a 1969 Corolla 1100 w/K-C Eng. _____

IMPORTED CAR APPLICATION GUIDE

KEY

DISTRIBUTOR REPAIR PARTS

Year	Model	Point Set	Con-denser	Rotor	Cap	Tune-Up Kit
TOYOTA						
1976	Corona; Celica; Mark II Hi-Lux 20R-C Eng. Corolla 2T-C Eng.	JP30	JCT110	JT91	JT96	6024
1975	Mark II 4M Eng.	JP30	N/R	JT85	JT86	.....
1975	Corolla 1600 2T-C Eng.	JP30	N/R	JT91	JT96	.....
1975	Mark II, Celica, Corona, Hi-Lux 20R-C Eng. (Exc. Dual Ign.)	JP30	N/R	JT91	JT96	.....
1975	Land Cruiser 2F Eng.	JP30	N/R	JT85	JT86	.....
1975	Corolla 1200 3K-C Eng.	JP30	JCT104	JT85	JT86	6022
1974-73	Mark II; 4M Eng. (Exc. Dist. 19100-45050)	JP30	JCT104	JT85	JT86	6022
1974-72	Celica; Hi-Lux; Mark II, Corona, 18R-C Eng.	JP30	JCT110	JT91	JT96	6024
1974-71	Corolla, Carina 1600 2T-C Eng.	JP30	JCT110	JT91	JT96	6024
1974-69	Land Cruiser F Eng. (Exc. Calif.)	JP25	JCT103	JT85	JT86	.....
1974-69	Corolla 1200 3K-C Eng.	JP30	JCT103	JT81	JT84	6017
1973	Mark II; Crown 4M Eng. (Dist. #19100-45050)	JP30	JCT104	JT85	JT86	6022
1972-68	Mark II; Crown 2M Eng.	JP30	JCT104	JT85	JT86	6022
1971	Mark II 8R-3 Eng.	JP25	JCT103	JT81	JT84	6012
1971	Corona, Celica, Hi-Lux, 8R-C Eng. (w/condenser mounted under vacuum control)	JP30	JCT110	JT91	JT96	6024
1971-70	Corona, Celica, Hi-Lux, Mark II 8R-C Eng. (Exc. w/ condenser mounted under vacuum control)	JP25	JCT103	JT81	JT84	6012
1970-69	Corolla 1100 K-C Eng.	JP30	JCT104	JT81	JT84	6022
1970-68	Corona 3R-C Eng.	JP25	JCT104	JT81	JT84	6021
1967	Corona 3R-C Eng. (Dist. #19100-34040; 50; 70)	JP25	JCT104	JT81	JT84	6021
1967	Corona 3R-C Eng. (Dist. #19100-40014)	JP25	JCT103	JT81	JT84	6012
1966-65	Corona 3R-C Eng.	JP25	JCT103	JT81	JT84	6012

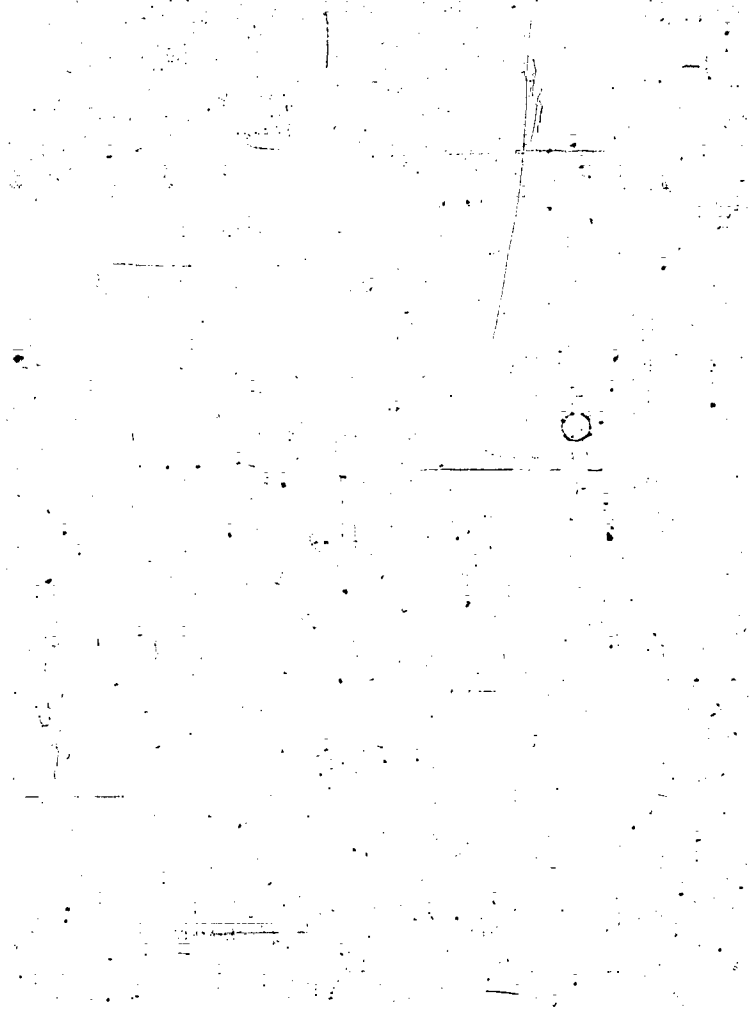
Directions: Find the correct part-number for the following applications and write it in the space provided. Pay attention to details and abbreviations. w/- with, w/o- without, #- number, N/R- none required, ---- not manufactured by this company, Exc.- except, Eng.- engine.

1. A rotor for a 1975 Land Cruiser — JT85
2. A Tune-Up Kit for a 1972 Carina 1600w/2T-C engine — 6024
3. A point set for a 1969 Corona w/3R-C engine — JP25
4. A condenser for a 1965 Corona w/3R-C engine — JCT103
5. A point set for a 1973 Hi-Lux w/18R-C Eng. — JP30
6. A cap for a 1966 Corona w/3R-C Eng. — JT84
7. A Tune-Up Kit for a 1969 Corolla 1100 w/K-C Eng. — 6022

THE ELECTRIC CROSSWORD PUZZLE

(Visual Communication)

Auto Verbal/Visual 6



THE ELECTRIC CROSSWORD PUZZLE

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

VISUAL COMMUNICATION

b. What student learning problem(s) prompted the development of this technique?

Students are unable to visually identify common electrical symbols.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. Explain to your class why electrical symbols are important.

b. Pass out the "Electrical Symbols" sheet. Have your students study this sheet and learn the names of the symbols.

c. Explain to your students how to solve a crossword puzzle.

d. Pass out the Electrical Symbols Crossword Puzzle Sheet. Ask your students to work this crossword puzzle.

e. Correct the crossword puzzles and review the electrical symbols with your class.

3. SUGGESTED RELATED ACTIVITIES:

There are many more electrical symbols. Make up your own crossword puzzles using these symbols.

THE ELECTRIC CROSSWORD PUZZLE

STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

a. Your teacher will explain the meaning of the electrical symbols on the Electrical Symbols sheet.

b. Learn the electrical symbols by memory.

c. Work the Electric Crossword Puzzle.

d. Turn in your Electric Crossword Puzzle to your teacher who will grade it.

2. STUDENT ASSIGNMENT:

Your assignment is found on STUDENT PAGE 2.

3. EXTRA THINGS THAT YOU CAN DO:

Try to name the electrical symbols shown on the wiring diagram for your car.

ELECTRICAL SYMBOLS

RESISTOR

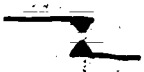
BATTERY

AMMETER

SIMPLE SWITCH

GENERATOR

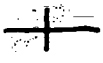
FUSE



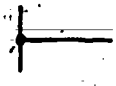
CONTACT POINTS

GROUND

RECTIFIER



WIRES CROSSED



CONNECTION

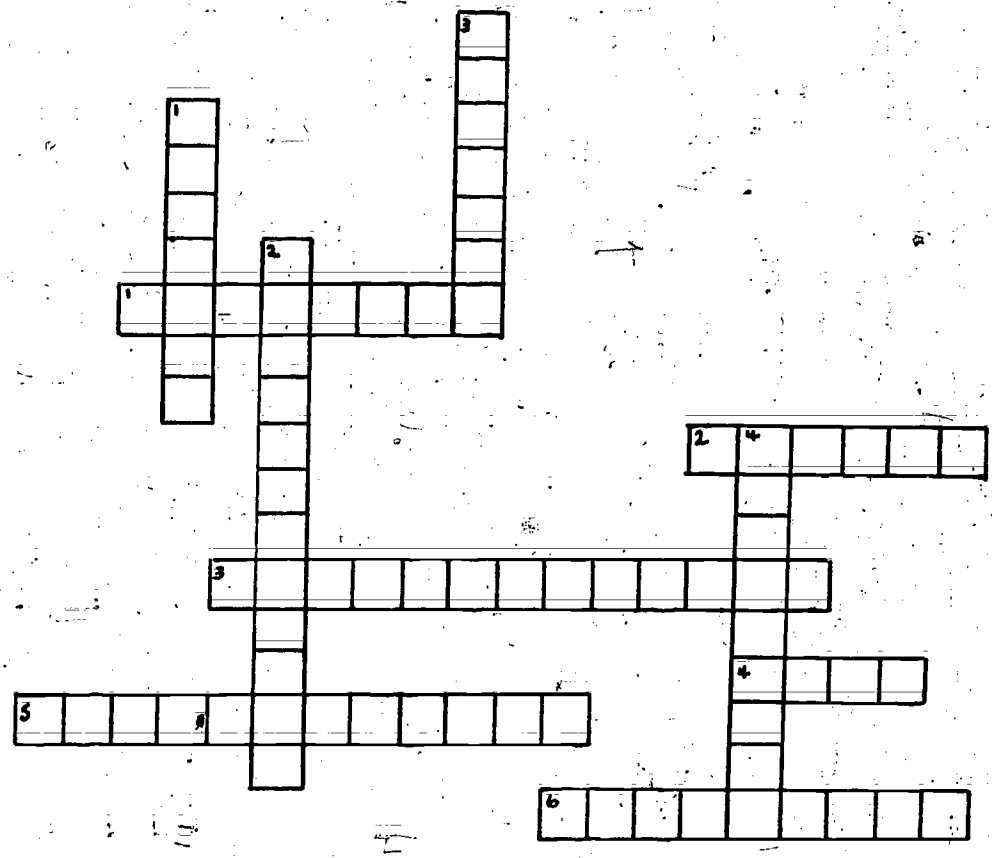
LAMP BULB

THE ELECTRIC CROSSWORD PUZZLE

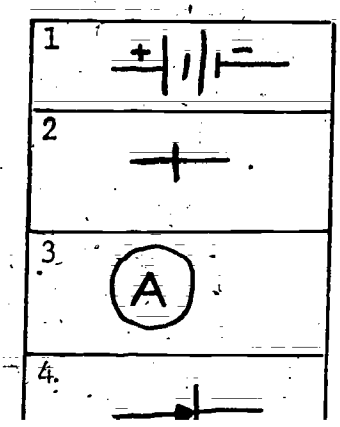
INSTRUCTIONS:

1.) Name the electrical symbols shown in down and across.

2.) Fill in the squares of the puzzle with the name of the electrical symbols.



DOWN



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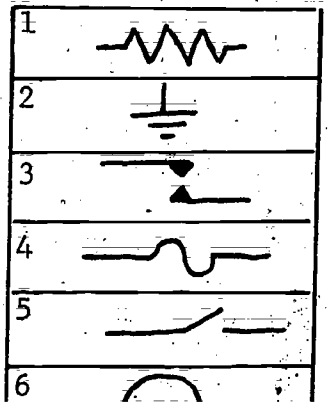


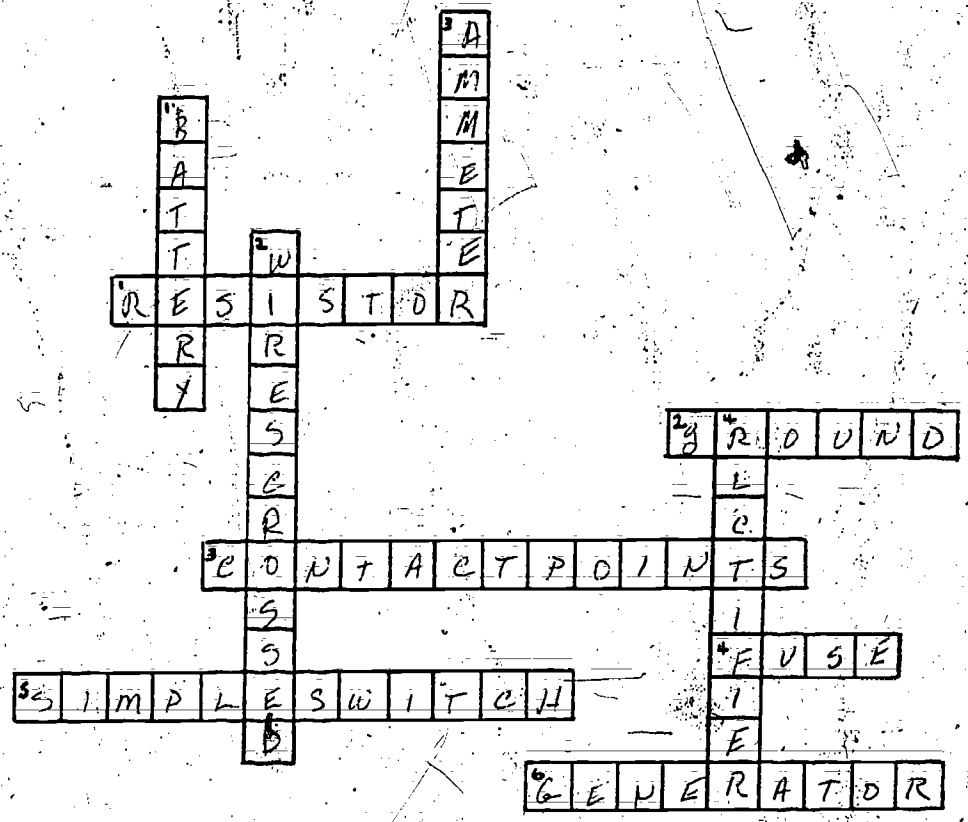
KEY

THE ELECTRIC CROSSWORD PUZZLE

INSTRUCTIONS:

1.) Name the electrical symbols shown in down and across.

2.) Fill in the squares of the puzzle with the name of the electrical symbols.



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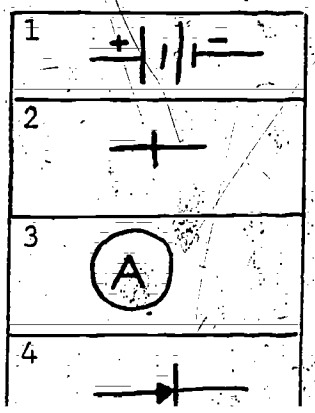

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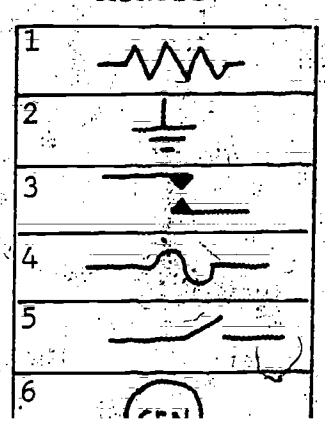
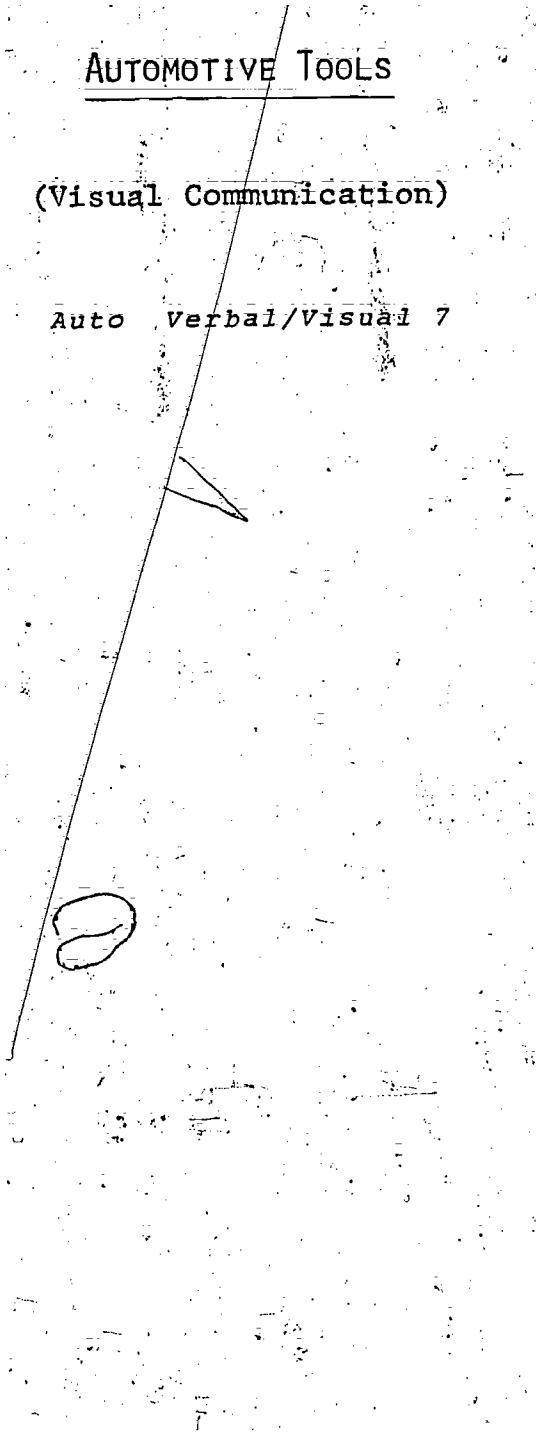


AUTOMOTIVE TOOLS

(Visual Communication)

Auto Verbal/Visual 7



AUTOMOTIVE TOOLS

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

Technical vocabulary development
Visual communication skills
Spelling

b. What student learning problem(s) prompted the development of this technique?

Students have limited vocabulary; they do not recognize words readily.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. When you are presenting shop tools to your students, write the names of the tools on the blackboard and tell your students to write these words in their notebooks. Tell them that they will need to recognize the words and know how to spell them.

b. On another day, place the tools on a table in the classroom. Beforehand, make up a series of cards with the tool names on them. Give these to selected students and have them match up the tools with the proper card. Repeat this exercise with other students.

c. When you feel the class is ready, give your students an exercise where they identify the name of the tools from an illustration. (See attachment)

3. SUGGESTED RELATED ACTIVITIES:

Have students write sentences using the new words they have learned.

Make up crossword puzzles using the new words.

AUTOMOTIVE TOOLS

STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

a. Write the correct name for each of the tools pictured here. Use the correct spelling.

2. STUDENT ASSIGNMENT:

Your assignment is found on STUDENT PAGES 2 - 5.

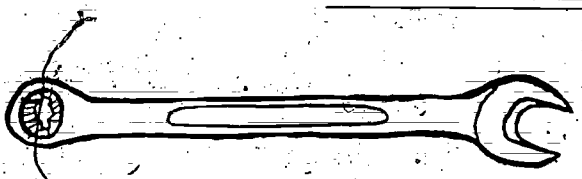
3. EXTRA THINGS THAT YOU CAN DO:

Ask your teacher to label the equipment in the shop. This will help you learn the names of the equipment faster.

NAME _____

PERIOD _____

AUTOMOTIVE TOOLS TEST



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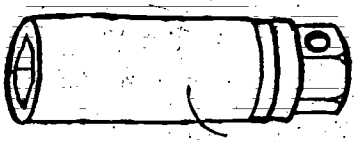
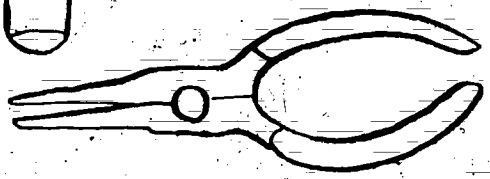


2 _____

3 _____



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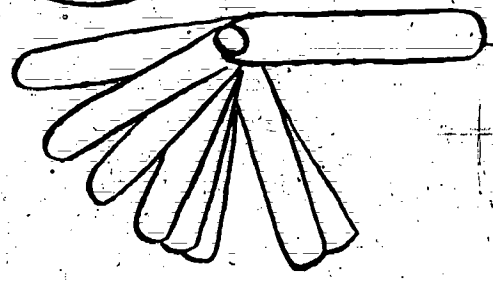

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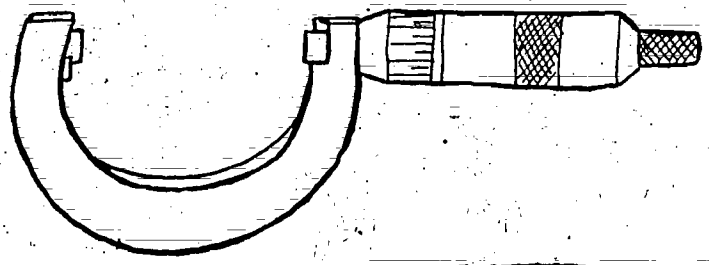

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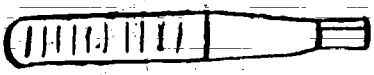

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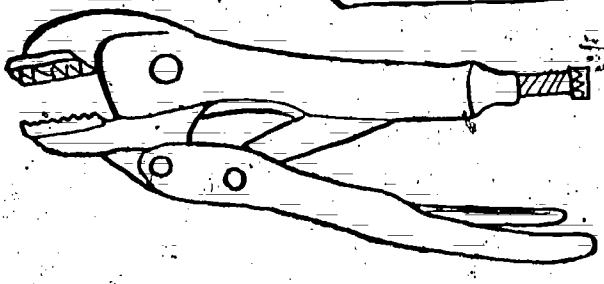

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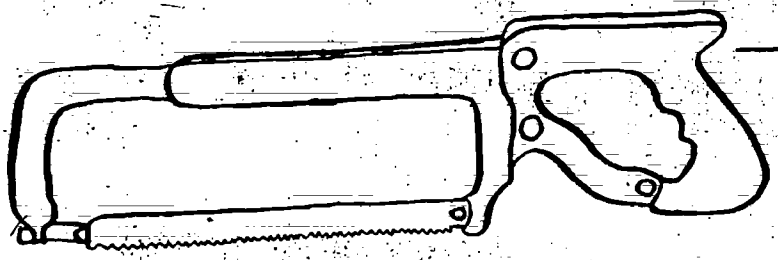
AUTOMOTIVE TOOLS TEST



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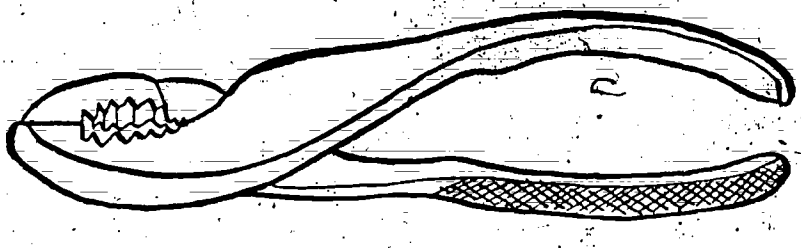

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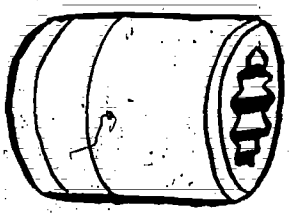

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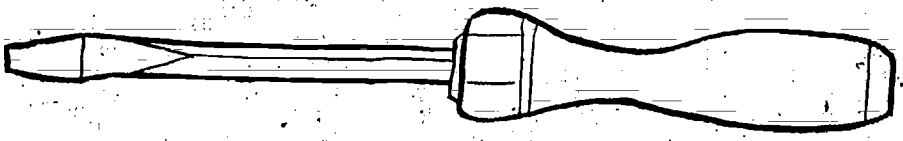

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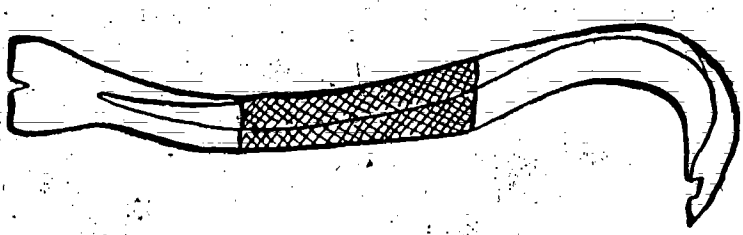

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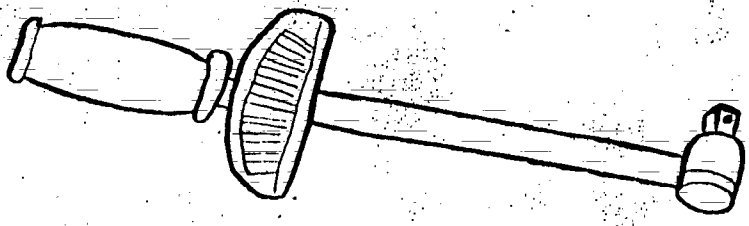

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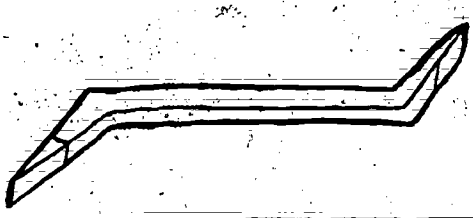
AUTOMOTIVE TOOLS TEST



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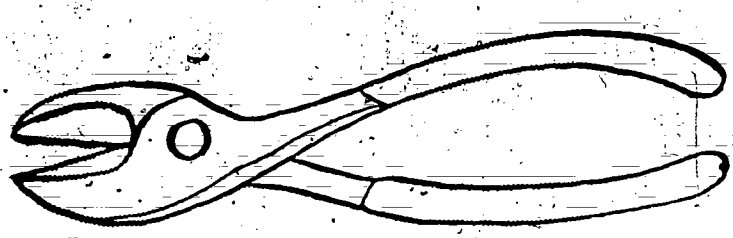

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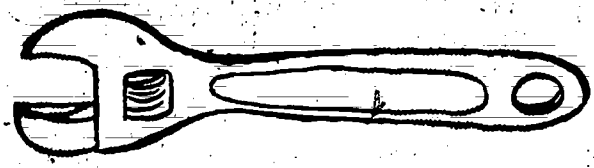

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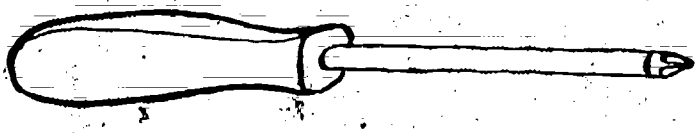

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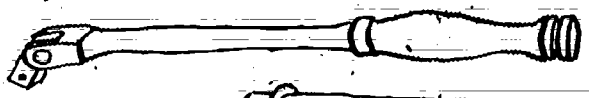

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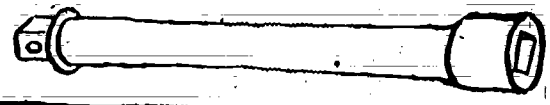

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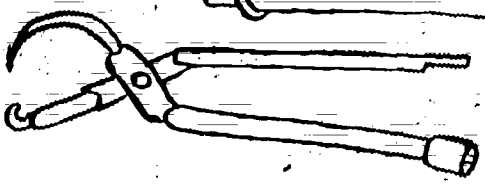

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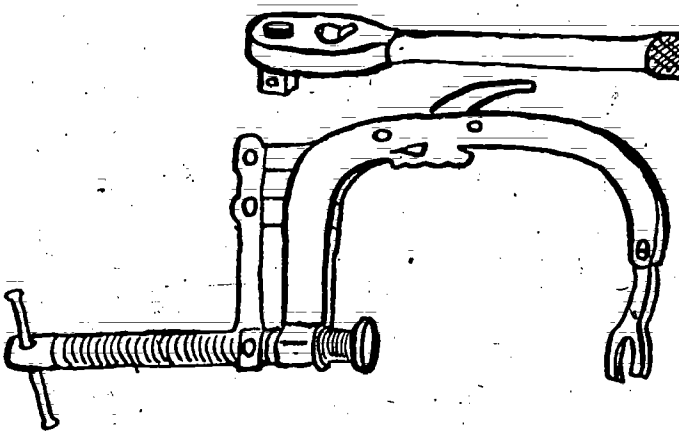
AUTOMOTIVE TOOLS TEST



25 _____

_____ 26 _____

(Verbal Communication)

Auto Verbal/Visual 8

DEMONSTRATING MACHINE OPERATIONS TO THE INSTRUCTOR

TEACHER MATERIALS:

1. CONCEPTS OF TECHNIQUE:

a. What SKILL will this technique teach?

VERBAL COMMUNICATION: This technique will assist the student in learning to verbally communicate with the teacher.

b. What student learning problem(s) prompted the development of this technique?

This technique was developed because of the inability of some students to communicate with the instructor.

2. TEACHER INSTRUCTIONS FOR THE USE OF THIS TECHNIQUE:

a. Identify students who have difficulty communicating verbally with the instructor.

b. Ask the student to demonstrate to the teacher how to perform a basic operation on a machine (example: operating a brake drum lathe; the student should be familiar with the operation of the machine).

c. Provide the student with "MACHINE SAFETY DEMONSTRATION" assignment card and set a date for the demonstration.

d. Review with the student the information needed and questions to be asked by the instructor.

e. Provide the student with the needed resources (reading assignment, information sheet, etc.).

f. Student will complete assignment by demonstrating and explaining verbally to the teacher how to perform the assigned operation.

3. SUGGESTED RELATED ACTIVITIES:

Students can strengthen their ability to communicate verbally by giving the same demonstration to new students or students not performing the operation correctly.

DEMONSTRATING MACHINE OPERATIONS

TO THE INSTRUCTOR

STUDENT MATERIALS:

1. STUDENT INSTRUCTIONS:

   a. You will demonstrate to the teacher the safe use of the _____(machine).

   b. The operation you will perform is_____.

   c. Use available reading materials in the classroom, library or from home. You will need to know vocabulary, safety rules and operation to be performed.

   d. An assignment card will be given to you by the instructor. This is to be filled out by you and used as reference during your demonstration. The instructor will review the information on the card prior to the demonstration.

2. STUDENT ASSIGNMENT:

   a. Prior to giving your demonstration to the teacher, practice with one of your parents at home or one of the other automotive students.

   b. The grade you receive will be based on:

      1. Your ability to answer these questions:

         a. What is the name of the machine you are using?
         b. What is the name of the operation to be performed?
         c. What are the safety rules for the machine?

      2. Your ability to use the machine.

      3. Your ability to explain to the teacher what you are doing.

3. EXTRA THINGS THAT YOU CAN DO:

   a. You may want to show new students how to use the machine.
   b. You may want to assist students in the class who are not using the machine correctly.

SAMPLE ASSIGNMENT CARD

FRONT

MACHINE SAFETY DEMONSTRATION

Student's name _____ Period ____

Date of Demonstration _____

Machine name _____

Operation _____

Notes: _____

BACK

SAFETY RULES:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

THE FOLLOWING INDUSTRIAL EDUCATION BASIC SKILL INSTRUCTIONAL TECHNIQUES ARE AVAILABLE FROM:

VOICE (VOCATIONAL OCCUPATIONAL INFORMATION CENTER FOR EDUCATORS)
721 CAPITOL MALL
SACRAMENTO, CALIFORNIA 95814

"LEARNING TO READ AND WRITE THE AUTOMOTIVE WAY"
"LEARNING TO DO MATH THE AUTOMOTIVE WAY"
"LEARNING TO VERBALLY & VISUALLY COMMUNICATE THE AUTOMOTIVE WAY"

"LEARNING TO READ AND WRITE THE WOODWORKING WAY"
"LEARNING TO DO MATH THE WOODWORKING WAY"
"LEARNING TO VERBALLY & VISUALLY COMMUNICATE THE WOODWORKING WAY"

"LEARNING TO READ AND WRITE THE METALWORKING WAY"
"LEARNING TO DO MATH THE METALWORKING WAY"
"LEARNING TO VERBALLY & VISUALLY COMMUNICATE THE METALWORKING WAY"

"LEARNING TO READ AND WRITE THE ELECTRONICS WAY"
"LEARNING TO DO MATH THE ELECTRONICS WAY"
"LEARNING TO VERBALLY & VISUALLY COMMUNICATE THE ELECTRONICS WAY"

"LEARNING TO READ AND WRITE THE DRAFTING WAY"
"LEARNING TO DO MATH THE DRAFTING WAY"
"LEARNING TO VERBALLY & VISUALLY COMMUNICATE THE DRAFTING WAY"